

	Text Viewer	Kind Codes	Source
1			US-PGPUB
2	Courier New		USPAT
3	12		USPAT
4	US 6324091 B1		USPAT
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6	US 6212093 B1		USPAT
7	US 6208553 B1		USPAT
8	US 5011756 A		USPAT
9	US 4825408 A		USPAT
10	US 4684598 A		USPAT
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12	US 6272038 B		DERWENT
13	WO 200152266 A		DERWENT
14	US 6208553 B		DERWENT

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(a) **United States Patent**
Buckley et al.

(b) Patent No.: **US 6,381,169 B1**
(c) Date of Patent: **Apr. 30, 2002**

(d) **HIGH DENSITY NON-VOLATILE MEMORY DEVICE**

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(f) Assignee: **The Regents of the University of California, Oakland, CA (US)**

(g) Name: **Subject to any disclaimer, the term of this patent is extended by six months under 35 U.S.C. 156(c) by 0 days.**

(h) Appl. No.: **08/344,326**
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(j) Int. Cl. **G11C 16/00**

(k) U.S. Cl. **256/28; 256/29**

(l) Field of Search **256/28, 256/29**

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(p) **Abstract**

This invention provides a non-volatile memory device that is electrically erasable permitting efficient writing and reading, that provides a high memory density (e.g., 10⁷ bits/cm²), that provides a high degree of data retention, and that is suitable for efficient electrical operation and data retention. The device is electrically erasable, data retention, and support structures or non-electronic read system. In a preferred embodiment, the device comprises a fluid electrode assembly coupled to a storage medium having a multiplicity of different and distinguishable conductive states wherein data is stored in said conductive states by the addition or withdrawal of one or more electrons from said storage medium via the electrically coupled electrode.

(q) **Claims, 55 Drawing Sheets**

(r) **Abstract, Appendices, or Drawings**

(s) **Abstract**

This invention provides a non-volatile memory device that is electrically erasable permitting efficient writing and reading, that provides a high memory density (e.g., 10⁷ bits/cm²), that provides a high degree of data retention, and that is suitable for efficient electrical operation and data retention. The device is electrically erasable, data retention, and support structures or non-electronic read system. In a preferred embodiment, the device comprises a fluid electrode assembly coupled to a storage medium having a multiplicity of different and distinguishable conductive states wherein data is stored in said conductive states by the addition or withdrawal of one or more electrons from said storage medium via the electrically coupled electrode.

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US 6272038 B
WO 200152266 A
US 6208553 B

1. $\text{BF}_3 \cdot \text{OEt}_2$, NH_4Cl , MeCN
2. DDQ

SCN

NCS

Zn(OAc) $_2$ ·2H $_2$ O, CH $_2$ Cl $_2$

Zn-1

FIG. 9

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Potember et al. [40] Date of Patent Apr. 25, 1999

[34] MULTIREGIME OPTICAL SWITCHING AND
IMAGING APPARATUS USING AN
AMPHIPHILIC ORGANIC CHARGE
TRANSFER MATERIAL

[35] Inventors: Richard S. Potember, Charnockle;
Theodore O. Potember, Baltimore, both
of MD

[37] Assignee: The Johns Hopkins University,
Baltimore, MD

[31] Appl. No. 08/437

[32] Filed: Apr. 7, 1997

Related U.S. Application Data

[33] Division of Ser. No. 08/437, Apr. 24, 1994, Pat. No.
4,460,370

[31] Int. Cl. G11C 16/00; G11B 5/70;
G03C 1/00; G03C 1/00

[32] U.S. Cl. 463/119; 343/154;
343/155; 492/493

[33] Field of Search 343/111, 114, 115;
492/493

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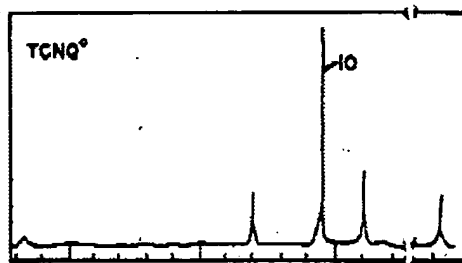
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Primary Examiner—William J. Blah
Attorney Agent & Firm—Robert E. Anshulski, Mary
Lorin Smith

[37] ABSTRACT

The charge transfer apparatus of the present invention
comprises an optical storage medium of either a mixture
of several charge transfer compounds of varying redox
potentials or a single amphiphilic organic charge transfer
compound capable of undergoing a multistage charge
transfer reaction, and a source of optical energy, typi-
cally a laser. When the optical energy illuminates a spot
on the optical storage medium, the spot switches to one
of a plurality of optically detectable states.

72 Claims, 8 Drawing Sheets



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FIG. 1

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